What is claimed is:

1 1. A reception display apparatus for receiving data blocks which

2 are repeatedly transmitted from a broadcasting station at regular

3 intervals and displaying a screen image based on the received data

4 blocks, each of the data blocks including a data section, and data

5 to be displayed as the screen image being divided into a plurality

6 of data sections, the reception display apparatus comprising:

7 a reception means for receiving the data blocks;

8 a data judgement means for judging whether the data

9 section in each received data block is normal;

10 a storage means for storing every data section judged

11 as normal by the data judgement means without storing data

12 sections judged as abnormal;

13 a condition judgement means for judging, before all data

14 sections to be displayed as the screen image are stored in the

15 storage means, whether a condition for displaying the screen image

16 is satisfied; and

17 a display means for displaying, when the condition

18 judgement means judges that the condition is satisfied, a part of

19 the screen image using data sections currently stored in the

20 storage means.

1 2. The reception display apparatus of Claim 1, wherein

2 the data judgement means generates, when having judged

3 that a data section is not normal, information indicating that the

4   data section is abnormal, and stores the information into the

5   storage means, and

6   the display means displays either a blank or a notice

7   indicating abnormality of the data section, at a position in the

8   screen image where the data section indicated as abnormal by the

9   information stored in the storage means should be displayed.

1   3.   The reception display apparatus of Claim 2, wherein

2   the screen image is either displayed at once on a screen

3   or viewed by scrolling by a user.

1   4.   The reception display apparatus of Claim 3, wherein

2   the screen image corresponds to one of (1) a file

3   including information used for referring to another file and (2)

4   a Hyper Text file, and

5   the display means displays a part of the screen image

6   using data sections of one of the file including information used

7   for referring to another file and the Hyper Text file currently

8   stored in the storage means.

1   5.   The reception display apparatus of Claim 1, wherein

2   the condition for displaying the screen image used in

3   the judgement by the condition judgement means is that either (1)

4   an instruction to display has been received from a user, or (2)

5   the reception means has received data blocks including all data

6   sections to be displayed as the screen image.

1   6. A reception display apparatus for receiving data blocks which

2   are repeatedly transmitted from a broadcasting station at regular

3   intervals and displaying a screen image based on the received data

4   blocks, each of the data blocks including (1) a data section

5   constituting original data to be displayed as the screen image and

6   (2) protocol information indicating a position of the data section

7   in the original data, the original data being divided into a

8   plurality of data sections, the reception display apparatus

9   comprising:

10   a reception means for receiving the data blocks;

11   a data judgement means for judging whether the data

12   section in each received data block is normal;

13   a storage means for storing (1) the protocol information

14   included in each data block received by the reception means and

15   (2) data sections judged as normal by the data judgement means,

16   the storage means not storing data sections judged as abnormal,

17   and each piece of stored protocol information showing

18   correspondence to a data section from a same data block;

19   a condition judgement means for judging, before all data

20   sections to be displayed as the screen image are stored in the

21   storage means, whether all pieces of protocol information for the

22   screen image have been stored in the storage means; and

23   a display means for, when the condition judgement means
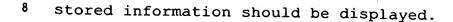
71

24 judges that all pieces of protocol information for the screen

25 image have been stored in the storage means, displaying a part of

26 the screen image using the data sections currently stored in the

27 storage means and all pieces of protocol information stored in the

28 storage means.

1 7.   The reception display apparatus of Claim 6, wherein

2   the data judgement means judges whether the protocol

3 information in each received data block is normal and then judges

4 for each data block that includes protocol information judged as

5 normal whether the data section in the data block is normal, and

6   the storage means stores every piece of protocol

7 information judged as normal.

1 8.   The reception display apparatus of Claim 6, wherein

2   when a data section is not stored in the storage means

3 and a piece of protocol information corresponding to the data

4 section is stored in the storage means, the display means displays

5 either a blank or a notice indicating abnormality of the data

6 section, at a position in the screen image which is indicated by

7 the piece of protocol information.

1 9.   The reception display apparatus of Claim 6, wherein

2   each piece of protocol information indicates a display

3 area in the screen image corresponding to a data section included

4　in the same data block, and

5　　　　the display means recognizes a display area on the

6　screen image corresponding to a data section not stored in the

7　storage means as a non-display area, and displays in the non-

8　display area, which is indicated by a piece of protocol

9　information corresponding to the data section not stored in the

10　storage means, either a blank or information indicating that a

11　data section has not been received normally.

1　10.　The reception display apparatus of Claim 6, wherein

2　　　　each piece of protocol information further indicates a

3　data size of a data section included in the same data block, and

4　　　　the display means generates a non-display area at a

5　position in the screen image where a data section not stored in

6　the storage means should be displayed, the non-display area having

7　a size equivalent to a data size of the data section not stored in

8　the storage means, and the data size and the position being

9　indicated by a piece of protocol information stored in the storage

10　means and corresponding to the data section not stored in the

11　storage means.

1　11.　The reception display apparatus of Claim 6, wherein

2　　　　the received data blocks belong to a lowest layer of a

3　plurality of layers, the data blocks in the lowest layer being

4　generated through the plurality of layers from the original data

5 in a highest layer so that each data block in each layer includes

6 (1) a data section which constitutes a data block in a next-higher

7 layer and (2) a piece of protocol information which indicates a

8 position of the data section included in the same data block, the

9 highest layer not including protocol information but consisting of

10 the original data which corresponds to the screen image,

11 the receiving means receives each data block in the

12 lowest layer,

13 the data judgement means judges whether the data section

14 in each received data block is normal,

15 the storage means stores (1) the protocol information

16 included in each data block received by the reception means and

17 (2) every data section judged as normal by the data judgement

18 means,

19 the condition judgement means judges, before all data

20 sections constituting a data block in a second-lowest layer are

21 stored in the storage means, whether all pieces of protocol

22 information necessary for the data block in the second-lowest

23 layer have been stored in the storage means,

24 when having judged so, reconstructs the data block in

25 the second-lowest layer by using data sections in the lowest layer

26 currently stored in the storage means and all corresponding pieces

27 of protocol information in the lowest layer stored in the storage

28 means,

29 repeats such a reconstruction of a data block until the

74

30 condition judgement means judges, before all data sections

31 constituting the original data in the highest layer are

32 reconstructed, that all pieces of protocol information necessary

33 for reconstructing the original data in the highest layer have

34 been prepared, and

35   at this point of time, the display means displays a part

36 of the screen image using the data sections in the second-highest

37 layer having been reconstructed so far and the all pieces of

38 protocol information in the second-highest layer necessary for

39 reconstructing the original data in the highest layer.

1 12.   The reception display apparatus of Claim 6, wherein

2   the screen image is either displayed at once on a screen

3 or viewed by scrolling by a user.

1 13.   The reception display apparatus of Claim 11, wherein

2   the screen image corresponds to one of (1) a file

3 including information used for referring to another file and (2)

4 a Hyper Text file, and

5   the display means displays a part of the screen image

6 using data sections of one of the file including information used

7 for referring to another file and the Hyper Text file currently

8 stored in the storage means.

1 14. A reception display method for receiving data blocks which are

2   repeatedly transmitted from a broadcasting station at regular

3   intervals and displaying a screen image based on the received data

4   blocks, each of the data blocks including a data section, and data

5   to be displayed as the screen image being divided into a plurality

6   of data sections, the reception display method comprising:

7   a reception step for receiving the data blocks;

8   a data judgement step for judging whether the data

9   section in each received data block is normal;

10   a storage step for storing every data section judged as

11   normal in the data judgement step without storing data sections

12   judged as abnormal;

13   a condition judgement step for judging, before all data

14   sections to be displayed as the screen image are stored, whether

15   a condition for displaying the screen image is satisfied; and

16   a display step for, when the condition judgement step

17   judges that the condition is satisfied, displaying a part of the

18   screen image using currently stored data sections.

1   15.   The reception display method of Claim 14, wherein

2   the data judgement step generates, when having judged

3   that a data section is not normal, information indicating that the

4   data section is abnormal, and stores the information, and

5   the display step displays either a blank or a notice

6   indicating abnormality of the data section, at a position in the

7   screen image where the data section indicated as abnormal by the

8   stored information should be displayed.

1   16.   A reception display method for receiving data blocks which

2   are repeatedly transmitted from a broadcasting station at regular

3   intervals and displaying a screen image based on the received data

4   blocks, each of the data blocks including (1) a data section

5   constituting original data to be displayed as the screen image and

6   (2) protocol information indicating a position of the data section

7   in the original data, the original data being divided into a

8   plurality of data sections, the reception display method

9   comprising:

10   a reception step for receiving the data blocks;

11   a data judgement step for judging whether the data

12   section in each received data block is normal;

13   a storage step for storing (1) the protocol information

14   included in each data block received in the reception step and (2)

15   data sections judged as normal in the data judgement step, the

16   storage step not storing data sections judged as abnormal, and

17   each piece of stored protocol information showing correspondence

18   to a data section from a same data block;

19   a condition judgement step for judging, before all data

20   sections to be displayed as the screen image are stored, whether

21   all pieces of protocol information for the screen image have been

22   stored; and

23   a display step for, when the condition judgement step

24 judges that all pieces of protocol information for the screen

25 image have been stored, displaying a part of the screen image

26 using the currently stored data sections and all pieces of stored

27 protocol information.

1 17. A computer-readable record medium recording a reception

2 display program for receiving data blocks which are repeatedly

3 transmitted from a broadcasting station at regular intervals and

4 displaying a screen image based on the received data blocks, each

5 of the data blocks including a data section, and data to be

6 displayed as the screen image being divided into a plurality of

7 data sections, the reception display program causing a computer to

8 execute:

9 a reception step for receiving the data blocks;

10 a data judgement step for judging whether the data

11 section in each received data block is normal;

12 a storage step for storing every data section judged as

13 normal in the data judgement step without storing data sections

14 judged as abnormal;

15 a condition judgement step for judging, before all data

16 sections to be displayed as the screen image are stored, whether

17 a condition for displaying the screen image is satisfied; and

18 a display step for, when the condition judgement step

19 judges that the condition is satisfied, displaying a part of the

20 screen image using currently stored data sections.

1   18. The computer-readable record medium of Claim 17, wherein

2   the data judgement step generates, when having judged

3   that a data section is not normal, information indicating that the

4   data section is abnormal, and stores the information, and

5   the display step displays either a blank or a notice

6   indicating abnormality of the data section, at a position in the

7   screen image where the data section indicated as abnormal by the

8   stored information should be displayed.

1   19. A computer-readable record medium recording a reception

2   display program for receiving data blocks which are repeatedly

3   transmitted from a broadcasting station at regular intervals and

4   displaying a screen image based on the received data blocks, each

5   of the data blocks including (1) a data section constituting

6   original data to be displayed as the screen image and (2) protocol

7   information indicating a position of the data section in the

8   original data, the original data being divided into a plurality of

9   data sections, the reception display program causing a computer to

10 execute:

11   a reception step for receiving the data blocks;

12   a data judgement step for judging whether the data

13 section in each received data block is normal;

14   a storage step for storing (1) the protocol information

15 included in each data block received in the reception step and (2)

16 data sections judged as normal in the data judgement step, the

17 storage step not storing data sections judged as abnormal, and

18 each piece of stored protocol information showing correspondence

19 to a data section from a same data block;

20   a condition judgement step for judging, before all data

21 sections to be displayed as the screen image are stored, whether

22 all pieces of protocol information for the screen image have been

23 stored; and

24   a display step for, when the condition judgement step

25 judges that all pieces of protocol information for the screen

26 image have been stored, displaying a part of the screen image

27 using the currently stored data sections and all pieces of stored

28 protocol information.